

REMARKS

In the final Office Action, the Examiner rejected claims 1, 10-18, 23-30, 34-37, 49, and 54-61 under 35 U.S.C. § 102(b) as anticipated by Meyers et al. (U.S. Patent No. 5,715,372), and rejected claims 2, 3, 19, 38, 42, and 50 under 35 U.S.C. § 103(a) as unpatentable over Meyers et al. in view of Malvar (U.S. Patent No. 6,256,608). The Examiner objected to claims 4-9, 20-22, 31-33, 39-41, 43-48, and 51-53 as dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the features of the base claim and any intervening claims.

By this Amendment, Applicant proposes amending 1-3, 5, 7-11, 14, 18-24, 26, 27, 29, 31-35, 38-42, 44, and 46-54 to improve form. Applicant appreciates the Examiner's identification of allowable subject matter, but respectfully traverses the Examiner's rejections under 35 U.S.C. §§ 102 and 103 with regard to the claims as amended herein. Claims 1-61 remain pending.

In paragraph 1 of the final Office Action, the Examiner rejected claims 1, 10-18, 23-30, 34-37, 49, and 54-61 under 35 U.S.C. § 102(b) as allegedly anticipated by Meyers et al. Applicant respectfully traverses the rejection with regard to the claims as amended herein.

Amended independent claim 1, for example, recites a combination of features of a device for evaluating quality in a telephonic voice connection in a telecommunications network. The device comprises a measurement circuit and a processor. The measurement circuit is operative to measure at least one characteristic of the telephonic voice connection. The processor, which is coupled to the measurement circuit, is operative to calculate a solution to a first mathematical function based on the at least one measured characteristic, where the first mathematical function

corresponds to an estimate of a percentage of likely users who would characterize the telephonic voice connection as having much impairment. The processor is also operative to calculate a solution to a second mathematical function based on the at least one measured characteristic, where the second mathematical function corresponds to an estimate of a percentage of likely users who would characterize the telephonic voice connection as having one of some or no impairment.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either expressly or impliedly. Any feature not directly taught must be inherently present. In other words, the identical invention must be shown in as complete detail as contained in the claim. See M.P.E.P. § 2131. Meyers et al. does not disclose or suggest the combination of features recited in amended claim 1. For example, Meyers et al. does not disclose or suggest a processor that is operative to calculate a solution to a first mathematical function based on the at least one measured characteristic, where the first mathematical function corresponds to an estimate of a percentage of likely users who would characterize the telephonic voice connection as having much impairment, and calculate a solution to a second mathematical function based on the at least one measured characteristic, where the second mathematical function corresponds to an estimate of a percentage of likely users who would characterize the telephonic voice connection as having one of some or no impairment.

Instead, Meyers et al. discloses calculating the power spectral density of a signal (col. 4, lines 16-30) and power spectral distortion given by the signal-to-noise ratio (col. 5, lines 1-39). Neither the power spectral density nor the power spectral distortion corresponds to an estimate of a percentage of likely users who would characterize the telephonic voice connection as having

much impairment or an estimate of a percentage of likely users who would characterize the telephonic voice connection as having one of some or no impairment, as required by claim 1.

For at least these reasons, Applicant submits that claim 1 is not anticipated by Meyers et al. Claims 10-17 depend from claim 1 and are, therefore, not anticipated by Meyers et al. for at least the reasons given with regard to claim 1. At least some of claims 10-17 are not anticipated by Meyers et al. for reasons of their own.

For example, claim 14 recites a memory operative to store the first and second mathematical functions, and an interface control circuit, which is coupled to the memory, that is adapted to receive at least one revised mathematical function from an external device and store the at least one revised mathematical function in the memory. Meyers et al. does not disclose or suggest the combination of features recited in claim 14.

For example, Meyers et al. does not disclose or suggest an interface control circuit that is adapted to receive at least one revised mathematical function from an external device and store the at least one revised mathematical function in the memory. The Examiner did not address this feature and, therefore, did not establish a proper case of anticipation with regard to claim 14.

For at least these additional reasons, Applicant submits that claim 14 is not anticipated by Meyers et al.

Amended independent claim 18 recites a combination of features of a method for evaluating quality in a telephonic voice connection in a telecommunications network. The method comprises establishing a telephonic voice connection; measuring at least one characteristic of the telephonic voice connection; and calculating solutions to a plurality of empirically derived mathematical functions based on the at least one measured characteristic,

where the empirically derived mathematical functions comprise at least two of: a first function (PN) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, a second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or a third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment.

Meyers et al. does not disclose or suggest the combination of features recited in amended claim 18. For example, Meyers et al. does not disclose or suggest calculating solutions to a plurality of empirically derived mathematical functions based on the at least one measured characteristic, where the empirically derived mathematical functions comprise at least two of: a first function (PN) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, a second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or a third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment.

Similar features were previously recited in claim 19. The Examiner rejected claim 19 under 35 U.S.C. § 103(a) as allegedly unpatentable over Meyers et al. in view of Malvar (final Office Action, paragraph 2). In particular, the Examiner alleged that Malvar "discloses using a modified probability distribution model wherein the shape is controlled by a single parameter, which is directly related to the peak value of the coefficients (columns 19-22) thus minimizing computational overhead for model selections" (final Office Action, page 4). Regardless of the

accuracy of the Examiner's allegation, Applicant submits that the Examiner has not addressed the features of claim 19 that are currently recited in claim 18.

In particular, the Examiner has not addressed the features of a first function (PN) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, a second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or a third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment that were recited in claim 19. Claim 18 currently recites that the empirically derived mathematical functions comprise at least two of the first function (PN) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, the second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or the third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment. Neither Meyers et al. nor Malvar, whether taken alone or in any reasonable combination, discloses or suggests these features.

For at least these reasons, Applicant submits that claim 18 is neither anticipated by Meyers et al. nor unpatentable over Meyers et al. and Malvar, whether taken alone or in any reasonable combination. Claims 23-28 depend from claim 18 and are, therefore, neither anticipated by Meyers et al. nor unpatentable over Meyers et al. and Malvar.

Amended independent claim 29 recites a combination of features of a programmable device for evaluating quality in a telephonic voice connection in a telecommunications network.

The device comprises a memory operative to store at least one mathematical function including at least one independent variable. The device also comprises a processor coupled to the memory that is operative to calculate a solution to the at least one mathematical function by using at least one measured characteristic as the independent variable. The solution is an estimate of the quality of the telephonic voice connection based on at least one of an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment. The device further comprises an interface control circuit coupled to the memory that is adapted to receive a revised mathematical function from an external device and store the revised mathematical function in the memory. The processor is configured to use the revised mathematical function to re-estimate the quality of the telephonic voice connection.

Meyers et al. does not disclose or suggest the combination of features recited in amended claim 29. For example, Meyers et al. does not disclose or suggest a processor that is operative to calculate a solution to at least one mathematical function by using at least one measured characteristic as the independent variable, where the solution is an estimate of the quality of the telephonic voice connection based on at least one of an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, or an estimate of a proportion of users who will perceive the telephonic voice

connection as having much impairment for reasons similar to reasons given with regard to claim 1.

Meyers et al. also does not disclose or suggest an interface control circuit that is adapted to receive a revised mathematical function from an external device and store the revised mathematical function in the memory, where the processor is configured to use the revised mathematical function to re-estimate the quality of the telephonic voice connection. The Examiner did not address the feature of an interface control circuit. Therefore, the Examiner did not establish a proper case of anticipation with regard to claim 29.

For at least these reasons, Applicant submits that claim 29 is not anticipated by Meyers et al. Claims 30 and 34-36 depend from claim 29 and are, therefore, not anticipated by Meyers et al. for at least the reasons given with regard to claim 29.

Independent claim 37 recites a combination of features of a method for fabricating a device for evaluating quality in a telephonic voice connection in a telecommunications network. The method comprises empirically acquiring user perception data by having at least one test subject listen to a plurality of test messages and rate the quality of each test message in accordance with at least one user perceived impairment characteristic; modeling the user perception data as at least one mathematical function, where the at least one mathematical function is graphically represented by a two dimensional curve having a shape, where the shape of the curve is determined by a set of constants employed in the at least one mathematical function; choosing values for the set of constants to thereby fit the two-dimensional curve to the user perception data to thereby generate at least one empirically derived mathematical function; converting the at least one empirically derived mathematical function into a set of computer

executable instructions; and programming the device with the set of computer executable instructions.

Meyers et al. does not disclose or suggest the combination of features recited in claim 37. For example, Meyers et al. does not disclose or suggest empirically acquiring user perception data by having at least one test subject listen to a plurality of test messages and rate the quality of each test message in accordance with at least one user perceived impairment characteristic. The Examiner did not address this feature of claim 37. Instead, the Examiner alleged that "Meyers anticipates device claim 1 which is linked to method claim 37. Therefore, method claim 37 is rejected for at least the same reason as apparatus claim 1 since the claimed apparatus would perform the steps recited [in] method claim 37" (final Office Action, page 9). Applicant disagrees.

Claim 1 does not disclose empirically acquiring user perception data by having at least one test subject listen to a plurality of test messages and rate the quality of each test message in accordance with at least one user perceived impairment characteristic, as recited in claim 37. Therefore, this feature of claim 37 cannot be rejected by generally referring to the rejection of claim 1, as the Examiner has done. Because the Examiner did not address this feature of claim 37, the Examiner has not established a proper case of anticipation with regard to claim 37.

Meyers et al. also does not disclose or suggest modeling the user perception data as at least one mathematical function, where the at least one mathematical function is graphically represented by a two dimensional curve having a shape, where the shape of the curve is determined by a set of constants employed in the at least one mathematical function, as recited in claim 37. The Examiner also did not address this feature of claim 37. Because this feature is

also not recited in claim 1, the Examiner has not established a proper case of anticipation with regard to claim 37.

Meyers et al. also does not disclose or suggest choosing values for the set of constants to thereby fit the two-dimensional curve to the user perception data to thereby generate at least one empirically derived mathematical function, as recited in claim 37. The Examiner also did not address this feature of claim 37. Because this feature is also not recited in claim 1, the Examiner has not established a proper case of anticipation with regard to claim 37.

For at least these reasons, Applicant submits that claim 37 is not anticipated by Meyers et al.

Amended independent claim 49 recites a combination of features of a computer readable medium having computer executable instructions for performing a method. The method comprises establishing a telephonic voice connection; measuring at least one characteristic of the telephonic voice connection; and determining a quality of the telephonic voice connection based on a first function (PN) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having no impairment, a second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, and a third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment, where the first, second, and third functions are based on the at least one measured characteristic.

Meyers et al. does not disclose or suggest the combination of features recited in amended claim 49. For example, Meyers et al. does not disclose or suggest determining a quality of the telephonic voice connection based on a first function (PN) representing an estimate of a

proportion of users who will perceive the telephonic voice connection as having no impairment, a second function (PS) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having some impairment, and a third function (PM) representing an estimate of a proportion of users who will perceive the telephonic voice connection as having much impairment, where the first, second, and third functions are based on the at least one measured characteristic for reasons similar to reasons given with regard to claim 1.

For at least these reasons, Applicant submits that claim 49 is not anticipated by Meyers et al. Claims 54-60 depend from claim 49 and are, therefore, not anticipated by Meyers et al. for at least the reasons given with regard to claim 49.

Independent claim 61 recites a combination of features of a programmable device for evaluating quality in a telephonic voice connection in a telecommunications network. The device comprises a memory, an interface control circuit, and a processor. The memory is operative to store at least one empirically derived mathematical function having at least one independent variable. The interface control circuit, which is coupled to the memory, is adapted to receive revised empirically derived data from an external device and store the revised empirically derived data in the memory. The processor, which is coupled to the memory, is programmed to calculate a revised at least one empirically derived mathematical function using the revised empirically derived data, and calculate a solution to the revised at least one empirically derived mathematical function by using at least one measured characteristic as the independent variable, whereby the solution is an estimate of likely user perception of the quality of the telephonic voice connection.

Meyers et al. does not disclose or suggest the combination of features recited in claim 61. For example, Meyers et al. does not disclose or suggest an interface control circuit that is adapted to receive revised empirically derived data from an external device and store the revised empirically derived data in the memory. The Examiner did not address the interface control circuit. Instead, the Examiner alleged that "Meyers anticipates device claim 1 which is linked to program claim 61. Therefore, program claim is rejected for at least the same reason as apparatus claim 1 since the claimed apparatus would perform the programmed steps recited in claim 61" (final Office Action, page 9). Applicant disagrees.

Claim 1 does not disclose an interface control circuit that is adapted to receive revised empirically derived data from an external device and store the revised empirically derived data in the memory. Therefore, this feature of claim 61 cannot be rejected by generally referring to the rejection of claim 1, as the Examiner has done. Because the Examiner did not address this feature of claim 61, the Examiner has not established a proper case of anticipation with regard to claim 61.

Meyers et al. also does not disclose or suggest a processor that is programmed to calculate a revised at least one empirically derived mathematical function using the revised empirically derived data, and calculate a solution to the revised at least one empirically derived mathematical function by using at least one measured characteristic as the independent variable, whereby the solution is an estimate of likely user perception of the quality of the telephonic voice connection, as further recited in claim 61. The Examiner also did not address these features involving a revised at last one empirically derived mathematical function, which are not recited in claim 1.

For at least these reasons, Applicant submits that claim 61 is not anticipated by Meyers et al.

In paragraph 2 of the final Office Action, the Examiner rejected claims 2, 3, 19, 38, 42, and 50 under 35 U.S.C. § 103(a) as allegedly unpatentable over Meyers et al. in view of Malvar. Applicant respectfully traverses the rejection.

Claims 2, 3, 19, 38, 42, and 50 variously depend from claims 1, 18, 37, and 49. While not acquiescing in the Examiner's rejection, Applicant submits that the disclosure of Malvar does not cure the deficiencies in the disclosure of Meyers et al. identified above with regard to claims 1, 18, 37, and 49. Therefore, claims 2, 3, 19, 38, 42, and 50 are patentable over Meyers et al. and Malvar, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claims 1, 18, 37, and 49.

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of the application and the timely allowance of pending claims 1-61.

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1-61 in condition for immediate allowance. Applicant submits that the entry of this Amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

If the Examiner believes that the application is not now in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned to discuss any outstanding issues.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account No. 13-2491 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

A handwritten signature in black ink, appearing to read "PAUL A. HARRITY", written over a horizontal line.

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